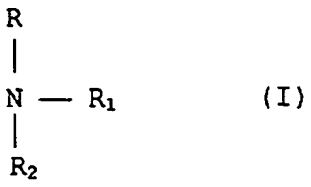
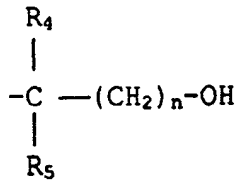
CLAIMS

1. A process in continuous for the preparation of olefin oxides by the direct epoxidation of an olefin with hydrogen peroxide, or compounds capable of producing hydrogen peroxide under the reaction conditions, in a solvent medium, in the presence of a catalytic system consisting of a zeolite containing titanium atoms and a nitrogenated base having general formula (I)



(I)

wherein: R, R_1 and R_2, the same or different, can be H, an alkyl group with C_1-C_{10} carbon atoms, a $-COR_3$ group wherein R_3 is an alkyl group with C_1-C_{10} carbon atoms, or a



group, wherein n is a number ranging from 1 to 10 and R_4 and R_5 are H or an alkyl group with C_1-C_{10} carbon atoms, on the condition that R, R_1 and R_2 are not contemporaneously H.

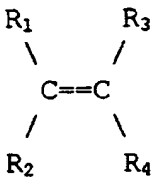
2. The process according to claim 1, wherein the compound having formula (I) is selected from ethylamine, n-

propylamine, diethylamine, n-butylamine, ethanolamine, diethanolamine and triethanolamine.

3. The process according to claim 1, wherein the starting olefin compounds are selected from aromatic, aliphatic, alkylaromatic, cyclic, branched or linear organic compounds, having at least one double bond.

4. The process according to claim 3, wherein the olefin compounds are selected from olefin hydrocarbons having from 2 to 30 carbon atoms in the molecule and containing at least one double bond.

5. The process according to claim 4, wherein the olefin compounds are selected from those having general formula (II)



wherein: R_1, R_2, R_3 and R_4, the same or different, can be H, an alkyl radical with from 1 to 20 carbon atoms, an aryl radical, an alkylaryl radical with from 7 to 20 carbon atoms, a cycloalkyl radical with from 6 to 10 carbon atoms, an alkylcycloalkyl radical with from 7 to 20 carbon atoms.

6. The process according to claim 5, wherein the radicals R_1, R_2, R_3 and R_4 can form, in pairs, saturated or un-

saturated rings.

7. The process according to claim 4, wherein the radicals R_1, R_2, R_3 and R_4 can contain substituents selected from halogens, nitro, nitrile, sulfonic groups and relative esters, carbonyl, hydroxyl, carboxyl, thiol amine and ether groups.

8. The process according to claim 1, wherein the olefin is propylene.

9. The process according to claim 1, wherein the compound having formula (I) is used in a quantity ranging from 5 to 500 ppm by weight with respect to the reaction mixture.

10. The process according to claim 9, wherein the compound having formula (I) is used in a quantity ranging from 10 to 100 ppm by weight with respect to the reaction mixture.

11. The process according to claim 1, wherein the hydrogen peroxide is used as an aqueous solution with a minimum titer of 1% by weight.

12. The process according to claim 11, wherein the hydrogen peroxide is used as an aqueous solution with a titer equal to or higher than 35% by weight.

13. The process according claim 1, wherein the molar ratio between olefin and hydrogen peroxide ranges from 10/1 to 1/10.

14. The process according claim 13, wherein the molar ratio between olefin and hydrogen peroxide ranges from 6/1 to 1/2.

15. The process according to claim 1, wherein the catalyst is selected from titanium silicalites having the following general formula:

$$xTiO_2 \cdot (1-x)SiO_2$$

wherein: x ranges from 0.0001 to 0.04.

16. The process according to claim 15, wherein the value of x ranges from 0.01 to 0.025

17. The process according to claim 15, wherein in the titanium silicalite part of the titanium is substituted by metals selected from boron, aluminum, iron or gallium.

18. The process according to claim 1, wherein the epoxidation reaction is carried out in one or more solvents, liquid at the epoxidation temperatures, selected from alcohols, ketones, ethers, aliphatic and aromatic hydrocarbons, halogenated hydrocarbons, esters and glycols.

19. The process according to claim 18, wherein the alcohols are selected from methanol, ethanol, isopropyl alcohol, t-butyl alcohol, cyclohexanol.

20. The process according to claim 18, wherein the ketones are selected from acetone, methyl ethyl ketone, aceto-

phenone.

21. The process according to claim 18, wherein the ethers are selected from tetrahydrofuran and butyl ether.

22. The process according to claim 18, wherein the solvent medium is a mixture of methanol/water with a weight ratio ranging from 50/50 and 99/1.

23. The process according to claim 1, wherein the epoxidation reaction is carried out at a temperature ranging from 20 to 150°C.

24. The process according to claim 21, wherein the temperature ranges from 40 to 100°C.